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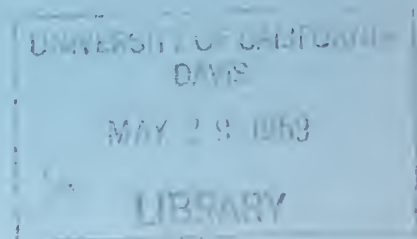
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

FOURTH SUPPLEMENT
TO
STATE WATER RESOURCES BOARD BULLETIN NO. 11
SAN JOAQUIN COUNTY INVESTIGATION
BASIC DATA
CALAVERAS UNIT
1957-58

EDMUND G. BROWN
Governor

HARVEY O. BANKS
Director of Water Resources

March 1959



STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

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Director of Water Resources

March, 1959

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2. Elevations of Water Levels in Selected Wells in Calaveras Unit



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STATE OF CALIFORNIA
Department of Water Resources
SACRAMENTO

March 27, 1959

Stockton and East San Joaquin
Water Conservation District
Bank of America Building
Stockton, California

Gentlemen:

There is transmitted herewith the Fourth Supplement to State Water Resources Board Bulletin No. 11, "San Joaquin County Investigation".

Bulletin No. 11 contains an inventory of water supply, water utilization, cost estimates and plans for water development works in the Calaveras River, Mokelumne River, and Farmington-Collegeville areas in San Joaquin County.

This supplement contains basic hydrologic data for the period fall 1957, through spring 1958. The agreement for this fiscal year, as in the case of the preceding year, provides for the collection of basic data in the Calaveras Unit only.

The data were collected and this supplement prepared in accordance with the terms of a cooperative agreement entered into October 1, 1957, between the Department of Water Resources and the Stockton and East San Joaquin Water Conservation District.

This agreement is being discontinued in favor of a cooperative arrangement whereby the further measurement of ground-water levels and stream flow would be carried out on a county-wide basis through the contribution of effort by each party, and the data would be published in the annual reports of ground-water conditions and surface-water flow of the Department. Negotiations are currently underway to effect such an arrangement. The Fourth Supplement, therefore, constitutes the last of the series.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Harvey O. Banks", is written over a horizontal line.

HARVEY O. BANKS
Director

ORGANIZATION
STATE DEPARTMENT OF WATER RESOURCES
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AUTHORIZATION

This fourth supplement to State Water Resources Board Bulletin No. 11, "San Joaquin County Investigation", was prepared in accordance with the terms of an agreement entered into as of October 1, 1957, between the Department of Water Resources and the Stockton and East San Joaquin Water Conservation District. A copy of the agreement is included in the appendix of this report.

SCOPE

The work performed consisted of the measurement of stream flows and ground-water levels and the sampling and mineral analysis of ground waters in the Calaveras Unit during the fall of 1957 and the spring and summer of 1958.

The similar basic data collected prior to 1957 and descriptions of the wells in which the water levels were measured, have been published heretofore in the First, Second, and Third Supplements to Bulletin No. 11 dated May 1956, April 1957, and January 1958, respectively.

Table 1 of this supplement contains a tabulation of depths to ground water measured at selected wells throughout the Unit. Reference point elevations listed to tenths of a foot were determined by differential levels, whereas elevations reported to the nearest foot were obtained by interpolation from topographic maps. Table 2 contains descriptions of wells not previously published.

Partial and complete mineral analyses of ground water are presented in Tables 3 and 4, respectively. As noted in Bulletin No. 11, the quality of ground water throughout the Calaveras Unit generally is excellent, with the exception of the water in certain deep wells in the vicinity of Stockton. Therefore, the analyses listed in the afore-mentioned tables have been confined largely to the ground waters in the area of these deep wells.

Tables 5 through 10 give the daily flow during the 1957 calendar year at gaging stations on the Calaveras River, Mormon Slough, Stockton Diverting Canal, and Duck Creek. These records are preliminary and subject to revision. Final 1957 records of runoff and stream diversions will be published in the 1957 "Report of Surface Water Flow", formerly "Report of Sacramento-San Joaquin Water Supervision", an annual publication of the Department of Water Resources.

Plate 1 delineates the location of wells and gaging stations at which the data reported herein were obtained. Plate 2 depicts hydrographs showing the fluctuation in elevation of water levels in selected wells in the Calaveras Unit during the period of record.

TABLE 1
DEPTHS TO GROUND WATER
IN CALAVERAS UNIT
FALL OF 1957 AND SPRING OF 1958

TABLE 1

DEPTHS TO GROUND WATER IN CALAVERAS UNIT
FALL OF 1957 AND SPRING OF 1958

Well number : and R. P. elev. ^a :	Date :	Dist. R. P. to water surface, in feet :	Well number : and R. P. elev. ^a :	Date :	Dist. R. P. to water surface, in feet :
3N/7E-25C1 72.7	-- 3-04-58	-- 57.8	3N/9E-36G1 181.2	10-14-57 3-04-58	76.9 68.3
3N/7E-25G1 75.7	10-14-57 3-05-58	70.7 61.0	3N/10E-31M1 191.1	10-14-57 3-06-58	72.3 69.2
3N/7E-27F3 ^b / 61.1	10-07-57 3-03-58	63.8 57.4	2N/6E-12H1 34.2	10-06-57 3-03-58	29.1 29.5
3N/7E-31B1 41.5	10-03-57 3-03-58	45.8 39.5	2N/6E-13M1 27.2	10-06-57 3-03-58	26.1 24.8
3N/7E-35C2 62.2	10-14-57 3-05-58	68.9 51.2	2N/6E-13R1 30.8	10-06-57 3-03-58	30.4 32.0
3N/7E-35L1 64.5	10-14-57 3-05-58	59.4 54.1	2N/6E-15J1 20.6	10-06-57 3-03-58	18.5 15.9
3N/7E-36D1 68.7	10-14-57 --	61.4 --	2N/6E-24J2 30.7	-- 3-03-58	-- 30.2
3N/7E-36K1 78.2	10-14-57 --	69.1 --	2N/6E-26H1 23.0	10-06-57 3-03-58	Dry 24.6
3N/8E-29G1 93.0	10-14-57 3-04-58	81.6 74.3	2N/6E-26L2 21.7	10-06-57 3-05-58	37.8 27.8
3N/8E-30H1 85.3	10-14-57 3-04-58	79.9 68.9	2N/6E-34K1 ^c / 8.8	9-57 1-58	43.0 32.0
3N/8E-32P1 85.6	-- 3-04-58	-- 69.1	2N/6E-36A1 ^c / 25.6	9-57 --	47.0 --
3N/9E-25R1 170.0	10-14-57 3-04-58	48.9 36.9	2N/6E-36R3 ^c / 23.9	9-57 --	59.0 --
3N/9E-33J1 141.7	10-14-57 --	68.0 --	2N/7E-3N3 56.3	10-08-57 --	54.5 --
3N/9E-35H1 162.9	10-14-57 --	54.8 --	2N/7E-5E1 41.5	10-08-57 --	41.8 --

TABLE 1 (continued)

DEPTHS TO GROUND WATER IN CALAVERAS UNIT
FALL OF 1957 AND SPRING OF 1958

Well number :	Date :	Dist. R. P. to water surface, in feet :	Well number :	Date :	Dist. R. P. to water surface, in feet :
R. P. elev. <u>a</u> :			R. P. elev. <u>a</u> :		
2N/7E-5R1	10-08-57	57.2	2N/7E-31F1	--	--
46.6	3-05-58	44.3	27.3	3-03-58	51.9
2N/7E-8D1	10-08-57	54.7	2N/7E-32R1	10-09-57	58.6
42.8	3-05-58	40.6	32.4	3-03-58	40.0
2N/7E-8K3	10-08-57	63.9	2N/7E-33R1	10-09-57	68.5
45.0	3-05-58	44.8	38.8	3-03-58	55.1
2N/7E-9B2	10-08-57	63.5	2N/7E-35L1	--	--
54.6	--	--	50.9	3-03-58	56.8
2N/7E-11H1	10-08-57	56.7	2N/7E-36H1	--	--
62.7	3-05-58	51.1	60.0	3-03-58	59.8
2N/7E-12A1	10-08-57	68.8	2N/8E-1R1	10-09-57	62.1
71.0	5-03-58	62.5	114.0	3-04-58	75.0
2N/7E-14P1	10-08-57	66.7	2N/8E-3G2	10-09-57	93.3
58.2	3-03-58	58.7	109.3	3-04-58	85.8
2N/7E-15C1	10-08-57	64.8	2N/8E-4C1	10-09-57	85.3
51.7	3-05-58	53.8	93.5	3-04-58	82.8
2N/7E-16L1	10-08-57	61.0	2N/8E-8N1	10-09-57	70.7
47.7	3-05-58	50.5	77.5	3-03-58	63.8
2N/7E-18K1	10-08-57	43.7	2N/8E-9G2	10-09-57	77.7
36.5	3-05-58	37.2	87.0	3-04-58	70.1
2N/7E-20M1	10-14-57	52.9	2N/8E-10H1	10-09-57	98.4
37.0	3-05-58	43.5	106.4	3-04-58	83.7
2N/7E-23J2	10-09-57	67.2	2N/8E-11B1	10-10-57	83.9
60.4	3-03-58	62.2	106.4	--	--
2N/7E-24B1	10-09-57	67.3	2N/8E-12L1	10-10-57	87.6
65.9	3-03-58	62.5	109.5	3-04-58	77.5
2N/7E-26N1	10-09-57	73.3	2N/8E-13K1	10-10-57	89.3
50.8	3-03-58	62.7	106.4	3-03-58	79.4
2N/7E-27D1	10-14-57	65.3	2N/8E-14C1	--	--
47.8	3-03-58	62.2	95.0	3-03-58	75.4

TABLE 1 (continued)

DEPTHS TO GROUND WATER IN CALAVERAS UNIT
FALL OF 1957 AND SPRING OF 1958

Well number : and : R. P. elev. ^a / : : :			Dist. R. P. : to water : surface, : in feet		
Well number : and : R. P. elev. ^a / : : :			Dist. R. P. : to water : surface, : in feet		
2N/8E-15M2	10-11-57	79.5	2N/9E-5H1	10-14-57	90.9
85.6	---	---	132.7	3-04-58	86.9
2N/8E-16D1	10-11-57	78.3	2N/9E-5L1	10-14-57	108.7
80.9	3-03-58	64.1	130.5	3-04-58	23.0
2N/8E-18C1	10-11-57	70.2	2N/9E-5N1	10-14-57	85.3
70.0	3-03-58	69.1	127.0	---	---
2N/8E-19P2	10-11-57	79.0	2N/9E-6F1	10-14-57	79.6
69.2	---	---	118.0	3-06-58	77.0
2N/8E-20F1	---	---	2N/9E-7G2	10-14-57	84.1
73.7	3-03-58	63.4	120.0	3-04-58	80.0
2N/8E-21R1	10-11-57	73.6	2N/9E-8N1	10-14-57	112.9
80.8	3-03-58	66.6	138.0	3-04-58	106.4
2N/8E-24P1	10-11-57	119.7	2N/9E-9D1	10-14-57	89.1
126.6	3-03-58	99.5	133.2	3-04-58	83.2
2N/8E-25P1	10-11-57	87.9	2N/9E-17C1	10-14-57	147.5
101.5	3-03-58	82.8	192.6	3-04-58	147.0
2N/8E-30H1	10-11-57	73.3	1N/6E-1J1 ^c /	9-57	71.1
70.5	---	---	25.2	---	---
2N/8E-31N1	10-11-57	77.9	1N/6E-3C1 ^c /	9-57	57.0
63.7	---	---	10.5	1-58	35.0
2N/8E-34E1	10-11-57	78.2	1N/6E-3J1 ^c /	9-57	61.0
82.9	3-04-58	67.0	13.2	1-58	45.0
2N/8E-35C1	10-11-57	78.9	1N/6E-4B1 ^c /	9-57	44.0
89.8	---	---	7.5	1-58	20.0
2N/8E-36L1	10-11-57	75.1	1N/6E-4D1 ^c /	9-57	49.0
97.7	3-06-58	72.9	5.7	3-58	23.0
2N/9E-3A1	10-11-57	66.8	1N/6E-12C3 ^c /	9-57	71.0
150.1	---	---	21.0	---	---
2N/9E-4H1	10-14-57	67.8	1N/6E-13J1 ^c /	9-57	67.0
154.1	3-04-58	64.8	20.2	1-58	54.0

TABLE 1 (continued)

DEPTHS TO GROUND WATER IN CALAVERAS UNIT
FALL OF 1957 AND SPRING OF 1958

Well number : and R. P. elev. ^{a/} :	Date :	Dist. R. P. to water surface, in feet :	Well number : and R. P. elev. ^{a/} :	Date :	Dist. R. P. to water surface, in feet :
1N/6E-14C1 ^{c/} 12.6	9-57 1-58	65.0 55.0	1N/7E-12Q1 55.6	10-02-57 3-13-58	63.3 55.9
1N/6E-23J1 18.0	10-02-57 3-05-58	32.2 24.7	1N/7E-13E1 51.7	10-03-57 3-13-58	58.7 54.8
1N/7E-1ML 54.8	10-02-57 --	64.3 --	1N/7E-16N1 33.2	10-02-57 3-13-58	50.7 46.6
1N/7E-4P3 34.2	10-02-57 3-06-58	42.8 51.6	1N/7E-19R1 24.7	10-02-57 3-13-58	44.3 39.0
1N/7E-7E1 ^{c/} 26.6	9-57 --	68.0 --	1N/8E-10B1 80.0	10-03-57 3-12-58	74.7 66+
1N/7E-8R1 32.0	10-02-57 --	12.5 --	1N/8E-13J1 95.1	10-03-57 3-12-58	80.9 68.1
1N/7E-11E1 49.1	10-02-57 --	63.2 --	1N/8E-17D1 68.7	10-03-57 3-13-58	69.9 63.5
1N/7E-11G1 51.7	-- 3-06-58	-- 57.4	1N/9E-7D1 116.0	10-03-57 3-12-58	94.9 90.1

^{a/} Reference point elevation in feet above mean sea level, U. S. G. S. datum.

^{b/} Description of well not previously published; see Table 2.

^{c/} Measurements obtained from California Water Service Company.

TABLE 2
DESCRIPTIONS OF WELLS NOT PREVIOUSLY PUBLISHED

TABLE 2

DESCRIPTIONS OF WELLS NOT PREVIOUSLY PUBLISHED

3N/7E-27F3 - Reference point - top of casing, elevation 61.1 feet. Located about 5.5 miles southeast of Lodi, 3,530 feet west of Waterloo Road and 200 \pm feet north of Live Oak Road.

2N/9E-7G1 - Owner - F. DeBenedetti. Located 0.25 mile south of Bellota bridge on Escalon-Bellota Road.

2N/8E-15L1 - Owner - Linden Water Service Company. Located on Anderson Street 0.15 mile north of Route 8, 0.15 mile east of Duncan Road.

2N/7E-14N1 - Owner - L. Dentoni, Route 3, Box 798-A. Located 0.25 mile north of Fairchild.

2N/7E-1J1 - Owner - Giamnechina, Box 141, Linden. Located 0.5 mile north of Waterloo Road on Jackson Road, 10 miles east of Stockton.

2N/6E-36P1 - Owner - Wilson Canning Company. Located at Cherokee Lane and Harding Way.

1N/9E-18G1 - Owner - Slang. Located 0.75 mile east of Hewitt Road and 0.7 mile north of State Highway 4.

1N/6E-14H1 - Owner - California Water Service. Located at Fourth and Grant Streets, Stockton.

1N/6E-10P4 - Owner - Fiberboard Products. Located at Church and Stockton Streets, Stockton.

1N/6E-10P2 - Owner - Fiberboard Products. Located at 800 West Church Street, Stockton.

1N/6E-10P1 - Owner - Fiberboard Products. Located at 800 West Church Street, Stockton.

1N/6E-10E2 - Owner - Union Ice Company. Located at Weber and Pershing Avenues, Stockton.

1N/6E-4J1 - Owner - City of Stockton. Located at Victory Park on Pershing Avenue between Acacia and Vernal Way. (Behind Pioneer Museum)

TABLE 3
PARTIAL MINERAL ANALYSES
OF GROUND WATER
IN CALAVERAS UNIT

TABLE 3
PARTIAL MINERAL ANALYSES OF GROUND WATER
IN CALAVERAS UNIT

Well number	Date sampled	Chloride, in parts per million	Conductance, Ec x 10 ⁶ at 25° C.
1N/6E-3H3	9-19-57	36	406
	6-04-58	121	691
1N/6E-4D1	1-20-58	59	338
	4-08-58	59	509
	6-04-58	64	528
1N/6E-4J1 ^{a/}	1-20-58	93	651
	6-04-58	108	652
1N/6E-10E2 ^{a/}	9-19-57	180	849
	1-20-58	212	870
	4-08-58	195	917
	6-04-58	191	957
1N/6E-10P2 ^{a/}	1-20-58	408	1410
	4-08-58	432	1610
1N/6E-14H1 ^{a/}	1-20-58	44	432
	4-08-58	44	416
	6-04-58	42	425

^{a/} Description of well not previously published; see Table 2.

TABLE 4
COMPLETE MINERAL ANALYSES
OF GROUND WATER
IN CALAVERAS UNIT

TABLE 4

COMPLETE MINERAL ANALYSES OF GROUND WATER
IN CALAVERAS UNIT

Well number	Date sampled	Conductance: Ec x 10 ⁶ at 25° C.	pH	Mineral constituents, in equivalents per million										Mineral constituents, in parts per million					Total as CaCO ₃ in ppm.	Per cent Na
				Ca	Mg	Na	K	CO ₃	HCO ₃	SO ₄	Cl	NO ₃	F	B	SiO ₂	hardness				
1N/6E-4D1	11-20-57	520	7.8	0.38	0.36	4.57	0.04	0	3.52	0.01	1.75	0	0	0.62	61	37	85			
1N/6E-4J1 ^a	11-20-57	561	7.4	0.60	0.42	4.57	0.03	0	3.15	0.10	2.37	0	0.1	0.67	48	51	81			
1N/6E-10E2 ^a	11-20-57	903	8.1	1.30	0.80	6.18	0.04	0	3.16	0.16	5.16	0.01	0	0.57	47	105	74			
1N/6E-10P1 ^a	11-20-57	2810	7.7	5.49	4.31	16.57	0.18	0	2.62	0.04	23.46	0	0	0.95	59	490	62			
1N/6E-10P2 ^a	11-20-57	1550	7.5	2.30	1.84	10.27	0.08	0	3.13	0.06	10.72	0.01	0	1.1	60	207	71			
1N/6E-10P4 ^a	9-19-57	2580	7.9	6.84	4.46	11.70	0.16	0	2.74	0.02	20.47	0.01	0	0.88	56	565	51			
1N/9E-18G1 ^a	7-16-58	197	7.1	0.65	0.67	0.56	0.08	0	1.38	0.13	0.27	0.13	0.3	0	76	66	28			
2N/6E-36P1 ^a	9-20-57	418	8.3	1.85	1.51	0.91	0.12	0.13	3.05	0.27	0.76	0.14	0.1	0.03	64	168	21			
2N/7E-1J1 ^a	9-20-57	374	8.5	1.80	1.46	0.70	0.08	0.27	3.25	0.16	0.37	0.05	0.2	0.02	73	163	17			
2N/7E-14N1 ^a	7-16-58	284	7.6	1.30	1.18	0.23	0.11	0	2.74	0.00	0.12	0.01	0.2	0.02	65	124	8			
2N/8E-15L1 ^a	7-16-58	291	7.2	1.45	0.95	0.20	0.07	0	2.31	0.08	0.21	0.09	0.3	0	65	120	7			
2N/9E-7G1 ^a	7-16-58	238	7.0	1.15	0.81	0.16	0.02	0	1.70	0.12	0.26	0.04	0.2	0.01	47	98	7			

^a Description of well not previously published; see Table 2.

STREAM FLOW TABULATIONS

TABLE 5

Flow of Calaveras River at Jenny Lind - 1957

TABLE 6

Flow of Calaveras River at Bellota - 1957

TABLE 7

Flow of Calaveras River near Stockton - 1957

TABLE 8

Flow of Mormon Slough at Bellota - 1957

TABLE 9

Flow of Stockton Diverting Canal at Stockton - 1957

TABLE 10

Flow of Duck Creek near Stockton (Pock Lane) - 1957

FLOW OF CALAVERAS RIVER AT JENNY LIND - 1957^{a/}

Daily Mean Flow in Second-Feet

Date	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	50	262	11	14	143	182	190	1.2	0	5.0	13
2	28	47	398	10	15	162	182	188	0.3	0	5.4	13
3	26	47	998	10	13	160	180	192	0	0	5.8	13
4	26	48	986	9.5	13	160	178	190	0	0	6.2	14
5	28	48	2,370	10	13	160	178	188	0	0	5.8	15
6	30	46	2,820	9.5	13	160	175	185	0	0	5.8	16
7	31	45	2,520	9.0	13	160	172	182	0	0	6.2	16
8	31	46	1,390	10	13	160	192	195	0	0	6.6	16
9	31	85	77	10	13	182	190	175	0	0	7.0	19
10	33	110	56	11	13	182	190	170	0	0	8.2	21
11	33	96	35	12	13	188	192	168	0	0	9.5	19
12	31	98	50	12	14	205	200	182	0	0	9.5	17
13	39	109	45	12	14	218	200	210	0	0	10	16
14	125	98	34	16	15	218	195	235	0	0	14	15
15	130	72	32	14	14	212	192	229	0	0	19	19
16	88	5.4	31	13	13	212	192	215	0	0	34	32
17	66	0.8	29	15	13	180	190	210	0	0	28	140
18	53	0.6	26	21	18	160	192	200	0	0	23	231
19	47	0.6	26	17	20	195	190	190	0	0	20	357
20	62	0.4	25	15	22	208	195	178	0	0.3	19	172
21	180	1.2	22	16	26	223	195	166	0	2.3	18	109
22	168	1.6	18	19	23	235	192	154	0	2.8	18	98
23	119	2.2	17	21	22	232	192	139	0	3.1	16	141
24	90	7.5	17	22	20	229	190	119	0	3.7	16	109
25	76	37	17	22	18	226	188	90	0	4.6	16	77
26	80	17	16	21	18	210	190	58	0	5.8	16	60
27	91	39	16	18	18	202	188	35	0	6.2	15	49
28	82	123	14	16	18	195	185	32	0	6.2	14	44
29	69	--	13	14	25	182	185	26	0	5.8	14	39
30	60	--	12	14	74	182	188	10	0	5.0	14	37
31	53	--	12	14.3	105	192	188	3.7	5.0	5.0	35	35
Mean	65.6	45.8	399	14.3	21.2	192	188	152	0.05	1.65	13.5	63.6
Ac. Ft.	4,030	2,540	24,560	853	1,300	11,410	11,590	9,330	3.0	101	803	3,910
Total Runoff in Acre-Feet												70,430

^{a/} Preliminary data subject to revision.

FLOW OF CALAVERAS RIVER AT BELLOTA - 1957^{a/}

Daily Mean Flow in Second-Feet

Date	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28	22	66	9.1	0	74	108	120	4.4		0	0.6
2	27	18	86	7.6	0	108	107	120	2.8		0	0.6
3	26	18	129	7.1	0	112	107	123	1.6		0	0.6
4	25	18	142	6.5	0	108	107	122	1.0		0	0.6
5	26	18	230 ^{b/}	5.6	0	107	109	120	0.3		0	0.9
6	27	24	260 ^{b/}	1.9	0	102	106	118	0.3		0	1.0
7	27	35	236	0.8	0	102	107	115	0.3		0	0.9
8	24	34	204	0.4	0	104	108	122	0.4		0	0.9
9	17	36	92	1.7	0	117	104	113	0.2		0	0.9
10	18	44	76	2.8	0	118	99	113	0.3		0	0.8
11	18	43	63	2.8	0	115	96	114	0.3		0	0.9
12	18	42	62	2.0	0	124	98	103	0.1	N	0	0.9
13	18	57	65	2.1	0	142	98	117	0	0	0	0.9
14	19	64	49	6.2	0	147	99	138	0		0	1.0
15	58	62	40	5.4	0	146	97	146	0		0	1.0
16	72 ^{b/}	39	37	2.5	0	146	101	141	0	F	0	1.3
17	44 ^{b/}	14	34	0	0	140	105	139	0	L	0	18
18	27	3.7	30	0	0	102	104	134	0	0	0	61
19	27	0	23	0	0	117	108	133	0	W	0	95
20	27	0	24	0	0	125	118	125	0		0	92
21	51	0	22	0	0	122	121	113	0		0.8	79
22	93	0	18	0	0	125	123	102	0		1.1	72
23	64	0	15	0	0	128	123	96	0		1.0	78
24	52	0	15	0	0	132	125	79	0		0.8	72
25	18	21	15	0	0	125	123	62	0		0.7	63
26	57	13	16	0	0	119	118	45	0		0.6	44
27	49	15	13	0	0	117	115	35	0		0.6	33
28	24	31	12	0	0	113	113	22	0		0.6	31
29	25		12	0	3.1	110	107	24	0		0.6	30
30	25		11	0	14	111	106	13	0		0.6	29
31	24		10		34		117	9.9				11 ^{b/}
Mean	34.0	24.0	68.1	2.2	1.6	119	109	99.3	0.4	0	0.2	26.5
Ac. Ft.	2,093	1,332	4,185	128	101	7,057	6,698	6,103	24	0	15	1,630
Total Runoff in Acre-Feet												29,366

^{a/} Preliminary data subject to revision.^{b/} Estimated.

TABLE 7

FLOW OF CALAVERAS RIVER NEAR STOCKTON - 1957^a/_b

Daily Mean Flow in Second-Feet

Date:	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11	7.5	21	2.6		0	26	1.2				0
2	12	6.1	54	0.4		0	12	6.2				0
3	12	3.8	97 ^b / _b	0		0	19	11				0
4	11	3.0	160 ^b / _b	0		0.8	11	26				0
5	11	1.5	198	0		24	19	14				0
6	11	0	225	0		22	26	6.4				0
7	12	0	217	0		10	15	5.8				0
8	13	12 ^b / _b	209	0		6.8	19	8.0				0
9	11	7.8 ^b / _b	140	0		0.2	17	9.5				0
10	5.8	6.4 ^b / _b	81	0		11	15	1.4				0
11	5.5	7.7 ^b / _b	64	0		6.4	6.0	2.0				0
12	5.6	11	53	0	N	3.8	2.6	0.4	N	N		0
13	6.3	4.8 ^b / _b	58	0	0	0	4.1	0	0	0		0
14	5.6	7.0 ^b / _b	52	0		3.8	15	0				0
15	4.9	15 ^b / _b	39	0		22	9.3	0				0
16	31	10 ^b / _b	31	0	F	42	0	20	F	F		0
17	38	2.0 ^b / _b	30	0	L	65	5.1	26	L	L		0
18	19	0 ^b / _b	26	0	0	42	1.0	36	0	0		0
19	12	0 ^b / _b	22	0	W	8.2	0	30	W	W		0
20	12	0 ^b / _b	14	0		6.9	0	26				36
21	9.4	0	14	0		28	2.7	19				54
22	9.6	0	12	0		26	10	9.3				50
23	49	0	7.1	0		41	7.4	0.9				50
24	24	0	4.3	0		39	5.3	0				61
25	22	0	3.4	0		35	9.9	0				55
26	19	0	3.1	0		33	7.2	0				49
27	37	2.0	2.5	0		26	18	0				26
28	19	1.5	0.6	0		16	25	0				21
29	11	0	0	0		15	18	0				20
30	10	0	0	0		28	5.2	0				19
31	10	0	0	0			0	0				18
Mean	15.2	3.9	59.5	0.1	0	18.7	10.7	8.4	0	0	0	14.8
Ac. Ft.	932	216	3,656	6	0	1,115	656	514	0	0	0	910
Total Runoff in Acre-Feet												8,005

^a/ Preliminary data subject to revision.
^b/ Estimated.

FLOW OF MORMON SLOUGH AT BELLOTA - 1957^{a/}

Daily Mean Flow in Second-Feet

Date	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	21	234	0	7.2	24	60	55			0	11
2	0	22	168	0	7.2	46	60	53			0	12
3	0	25	739	0	7.2	56	58	53			0	13
4	0	28	795	0	3.9	51	57	52			0	16
5	0	29	2,280	0	2.2	50	58	48			0	14
6	0	24	2,480	0	1.3	42	63	46			0	10
7	0	7.5	2,100	0	0.8	42	62	41			0	7.2
8	2.2	5.6	1,550	0	0	40	60	54			0	9.2
9	10	10	153	0	0	45	62	45			0	7.2
10	9.2	41	62	0	2.4	39	59	43			0	7.2
11	11	40	10	0	4.3	33	56	39	N		0	8.2
12	11	36	7.0	0	7.2	46	63	28	N		0	8.2
13	17	32	10	0	6.2	54	63	38	0		0	7.2
14	38	23	0	0	5.3	60	63	50			0	7.2
15	71	18	0	0	4.3	58	60	55			0	10
16	29	2.6	0	0	2.2	57	64	49	F		0	17
17	29	0	0	0	3.0	54	60	46	L		0	37
18	33	0.1	0	2.9	8.2	28	60	42	0		0	125
19	24	2.2	0	13	12	41	56	43	W		0	238
20	26	3.0	0	10	14	45	58	38			0	131
21	55	4.3	0	10	13	41	59	33			0	53
22	100	3.9	0	5.3	14	54	60	26			2.2	23
23	44	5.3	0	7.2	13	64	60	19			3.4	50
24	18	11	0	7.2	12	70	57	10			3.4	53
25	21	2.7	0	9.2	7.6	74	54	3.6			4.3	24
26	8.0	15	0	9.2	5.4	74	52	2.4			5.3	20
27	13	12	0	8.2	6.6	70	51	0.8			6.2	20
28	24	39	0	9.2	7.0	68	50	0			7.2	13
29	26		0	8.2	7.1	65	48	0.1			7.2	10
30	29		0	8.2	3.6	65	52	0.1			10	7.2
31	23		0		17	55	55	0				17
Mean	21.7	16.5	342	4.0	6.6	51.7	58.1	32.7	0	0	1.6	31.8
Ac. Ft.	1,332	919	21,000	238	407	3,074	3,570	2,009	0	0	98	1,957
Total Runoff in Acre-Feet												34,604

^{a/} Preliminary data subject to revision.

FLOW OF STOCKTON DIVERTING CANAL AT STOCKTON - 1957^{a/}

Daily Mean Flow in Second-Feet

Date	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	7.1	260 ^{b/}			0	8.2	0				0
2	0	5.8	142			0	1.3	0				0
3	0	6.1	549			0	0	0				0
4	0	7.1	728			0	0	0				0
5	0	9.9	2,000			0	0	1.2				0
6	0	11	2,630			0	0	0.1				0
7	0	9.2	2,070			0	0	0				0
8	0	1.4	1,800			0	2.4	0				0
9	0	0.1	264			0	0	9.8				0
10	0	0	96			2.9	0	4.4				0
11	0	17	32			0	0	2.1				0
12	0	20	9.9	N		0	0	3.2	N	N	N	0
13	0	17	2.4	0	0	0	0	0.5	0	0	0	0
14	0	11	2.8			0	12	0				0
15	12	4.2	0.7			0	15	0				0
16	34	1.8	0	F	F	0	0	1.2	F	F	F	0
17	10	0.1	0	L	L	0	0.5	2.0	L	L	L	0
18	16	0	0	0	0	0	0 ^{b/}	0.6	0	0	0	34
19	14	0	0	W	W	0	0 ^{b/}	0.5	W	W	W	161
20	11	0	0			0	0 ^{b/}	1.0				168
21	12	0	0			0	0 ^{b/}	1.2				68
22	74	0	0			0	6.1 ^{b/}	1.1				27
23	62	0	0			11	7.1 ^{b/}	0.2				8.5
24	54	0	0			19	3.2 ^{b/}	0				36
25	38	0	0			12	1.9	0				25
26	48	0	0			19	0	0				7.1
27	9.4	0	0			19	0	0				1.7
28	25	8.0 ^{b/}	0			14	0	0				4.0
29	31	0	0			7.0	1.8	0				0.4
30	17	0	0			4.3	0.1	0				0
31	12		0				0	0				0
Mean	15.5	4.9	342	0	0	3.6	1.9	0.9	0	0	0	17.4
Ac. Ft.	951	271	21,000	0	0	215	118	58	0	0	0	1,072
Total Runoff in Acre-Feet												23,685

^{a/} Preliminary data subject to revision.

^{b/} Estimated.

FLOW OF DUCK CREEK NEAR STOCKTON (POCK LANE) - 1957^{a/}

Daily Mean Flow in Second-Feet

Date	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1			0	0	0	0.1	0.3	1.5	2.0	<u>0.5</u>		
2			0	0	0	0.2	0.3	1.1	1.2	<u>0.5</u>		
3			0	0	0	0	0.6	1.0	0	<u>0.5</u>		
4			0	0	0.4	0.1	0.5	1.2	0.2	<u>0.5</u>		
5			2.5	0	0.7	0.2	0.9	1.8	3.3	<u>0.7</u>		
6			96	0	0.4	0.2	0.8	0.5	6.4	<u>0.5</u>		
7			49	0	1.4	0.2	0.5	1.1	5.2	<u>0.5</u>		
8			21	0	0.4	0.1	0.5	2.6	1.7	<u>0.5</u>		
9			12	0.3	0.1	0	0.8	3.4	0.1	<u>0.5</u>		
10			7.6	0.6	0.1	0	0.8	1.3	0.2	<u>0.6</u>		
11			3.7	0.5	0.2	0	0.5	0.4	1.7	<u>1.1</u>		
12	N	N	4.8	0.5	0.3	0.2	0.1	0.9	0.7	<u>0.8</u>	N	N
13	0	0	5.4	1.0	0.2	0.1	0.4	1.5	0.7	<u>0.8</u>	0	0
14			2.6	2.1	0.1	0.2	1.5	0.9	1.5	<u>1.3</u>		
15			1.2	2.3	0	0.5	0.9	1.1	0.9	<u>0.8</u>		
16	F	F	0.8	2.5	0	0.2	0.8	1.6	0.2	<u>0.5</u>	F	F
17	L	L	0.5	0.7	0	0.2	1.3	1.0	0.1	<u>0.3</u>	L	L
18	0	0	0.4	4.1	0	0.2	2.3	0.8	5.3	<u>1.3</u>	0	0
19	W	W	0.3	1.8	0.1	0.4	1.6	0.3	5.4	<u>0.4</u>	W	W
20			0.2	0.3	0.7	0.4	0.7	3.2	2.1	<u>0.1</u>		
21			0	0.1	1.1	0.3	0.4	2.6	0.8	<u>0.5</u>		
22			0	0	3.5	0.2	0.2	2.4	0.4			
23			0	0	4.3	0.5	0.3	4.5	1.1			
24			0	0	2.9	0.6	0.9	5.4	1.0			
25			0	0	0.8	0.8	1.5	2.9	0.5			
26			0	0	0.2	0.5	2.4	1.8	0.5			
27			0	0	0	0.5	2.2	1.4	1.2			
28			0	0	0.1	0.2	0.4	2.1	1.2			
29			0	0	0.1	0	0.3	3.3	1.3			
30			0	0	0	0	1.0	2.8	0.3			
31			0		0		1.2	3.7				
Mean	0	0	6.7	0.6	0.6	0.2	0.9	1.9	1.6	0.3	0	0
Ao. Ft.	0	0	413	33	36	14	53	119	94	21	0	0
Total Runoff in Acre-Feet												
783												

^{a/} Preliminary data subject to revision.^{b/} Estimated.

APPENDIX A

AGREEMENT BETWEEN THE DEPARTMENT OF WATER RESOURCES AND THE
STOCKTON AND EAST SAN JOAQUIN WATER CONSERVATION DISTRICT

APPENDIX A

AGREEMENT
BETWEEN THE DEPARTMENT OF WATER RESOURCES
AND THE
STOCKTON AND EAST SAN JOAQUIN WATER CONSERVATION DISTRICT

THIS AGREEMENT, executed in quintuplicate, entered into as of October 1, 1957, by the Department of Water Resources of the State of California, hereinafter referred to as the "Department", and the Stockton and East San Joaquin Water Conservation District, hereinafter referred to as the "District".

W I T N E S S E T H

WHEREAS, an investigation of the Calaveras River Area in San Joaquin County has been conducted by the Department of Public Works, acting by and through the agency of the State Engineer, between February 1948 and September 1955, and the results of said investigation have been published pursuant to a cooperative arrangement between the Department of Public Works and the County of San Joaquin whereby the work accomplished, including publication of the bulletin, was financed with funds contributed equally by the County and the State of California; and

WHEREAS, funds were appropriated to the Department by Item 265 of the Budget Act of 1957 for continuing work on ground water level, stream flow measurements, and a quality of water check, in the Calaveras River Area on a matching basis, pending accomplishment of solution of the water problems in the area; and

WHEREAS, by the State Water Resources Act of 1945, as amended, the Department is authorized to make investigations, studies, surveys, prepare plans and estimates, and make recommendations to the Legislature in regard to water development projects; and

WHEREAS, by said act, the Department is authorized to cooperate with any county, city, state agency, or public district on flood control and other water problems and when requested by any thereof may enter into a cooperative agreement to expend money in behalf of any thereof to accomplish the purposes of said act; and

WHEREAS, the District desires and hereby requests the Department to enter into a cooperative agreement for the making of ground-water level and stream flow measurements, and a quality of water check in the Calaveras River Area between October 1, 1957, and September 30, 1958, and prepare a supplement report thereon:

NOW THEREFORE, in consideration of the premises and of the several promises to be faithfully performed by each as hereinafter set forth, the Department and the District do hereby mutually agree as follows:

ARTICLE I - WORK TO BE PERFORMED:

The work to be performed under this agreement shall consist of stream flow measurements and a series of ground water level measurements in the fall of 1957 and spring of 1958, a general water quality check of surface and underground waters in the Calaveras River Area, and the compilation and preparation of a report on the results of such measurements and water quality check.

The Department agrees to proceed with the work to be performed, and to contract with the District to secure any portion of the necessary records and data required by this agreement.

During the progress of said investigation and report, all maps, plans, information, data, and records pertaining thereto, which are in the possession of any party hereto, shall be made fully available to any other party for the due and proper accomplishment of the purposes and objects hereof.

The work under this agreement shall be diligently prosecuted with the objective of completion of the investigation and compilation of data and preparation of a report thereon on or before September 30, 1958, or as soon thereafter as possible.

ARTICLE II - FUNDS:

The District, upon execution by it of this agreement, shall transmit to the Department the sum of One Thousand Dollars (\$1,000) for deposit, subject to the approval of the Director of Finance, into the Water Resources Revolving Fund in the State Treasury, for expenditures by the Department in performance of the work provided for in this agreement. Also,

upon execution of this agreement by the Department, the Director of Finance will be requested to approve the transfer of the sum of One Thousand Dollars (\$1,000) from funds made available to the Department by Item 265 of the Budget Act of 1957, as augmented, for expenditure by the Department in performance of the work provided for in this agreement and the State Controller will be requested to make such transfer.

The Department shall under no circumstances be obligated to expend for or on account of the work provided for under this agreement any amount in excess of the sum of Two Thousand Dollars (\$2,000) as made available hereunder and when said sum is exhausted, the Department may discontinue the work provided for in this agreement and shall not be liable or responsible for the resumption and completion thereof.

Upon completion of and final payment for the work provided for in this agreement, the Department shall furnish to the District a statement of all expenditures made under this agreement. One-half of the total amount of all said expenditures shall be deducted from the sum advanced from funds appropriated to said Department, and one-half of the total amount of all said expenditures shall be deducted from the sum advanced by the District and any balance which may remain shall be returned to the Department, and to the District, in equal amount.

IN WITNESS WHEREOF, the parties hereto have executed this agreement to be effective as of the date hereinabove first written.

Approved as to Form and
Procedure

STOCKTON AND EAST SAN JOAQUIN
WATER CONSERVATION DISTRICT

/s/ Irving L. Neumiller
Attorney for Stockton and East
San Joaquin Water Conservation
District

By /s/ J. H. Burton
Chairman, Board of Directors

Approved as to Engineering

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

/s/ I. M. Ingerson
Chief, Engineering Services
Branch

HARVEY O. BANKS
Director of Water Resources

Approved as to Form and
Procedure

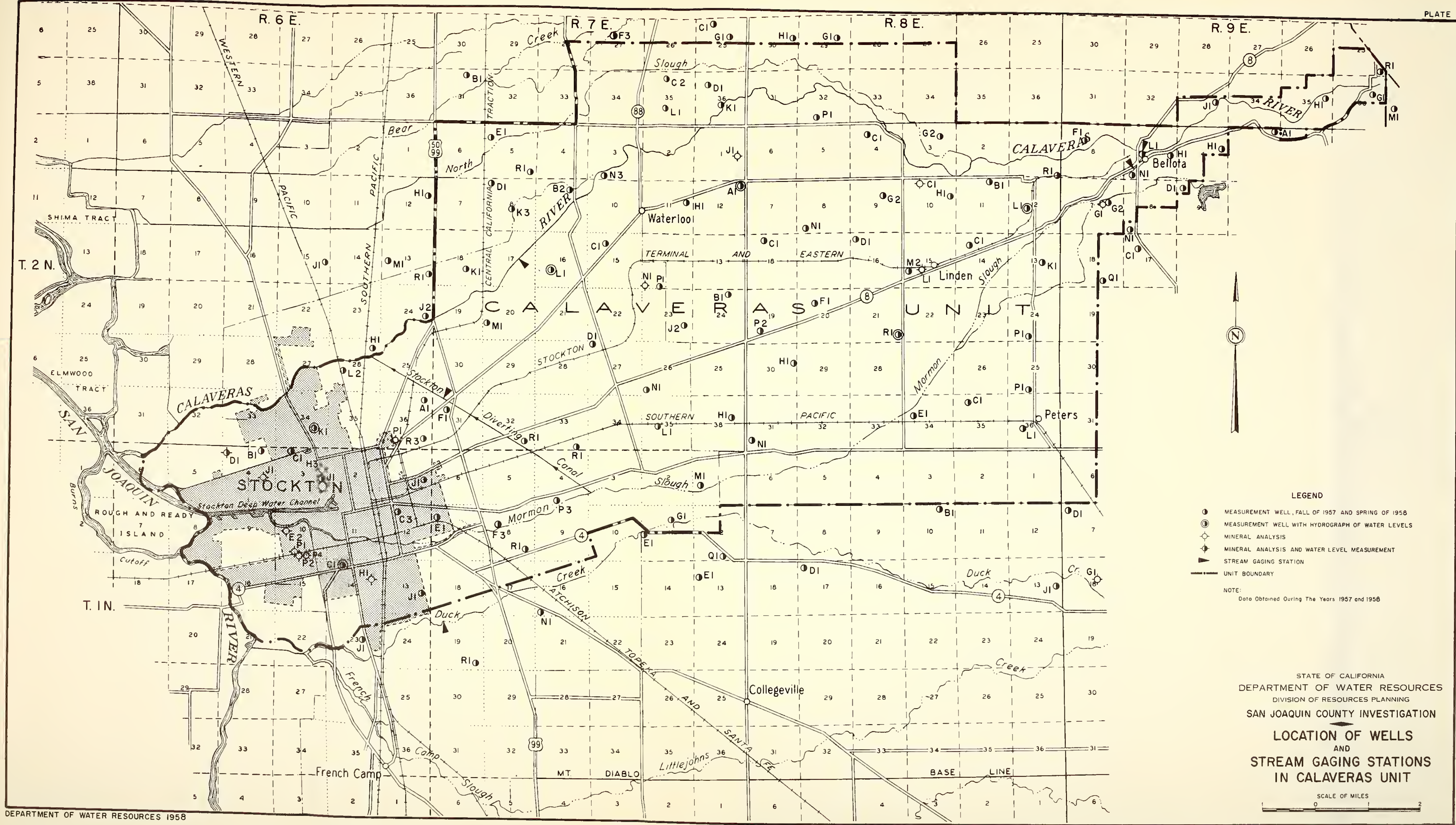
By /s/ Paul L. Barnes
Chief, Division of
Administration

/s/ P. A. Towner
Chief Counsel, Department of
Water Resources

DEPARTMENT OF FINANCE
A P P R O V E D
January 7, 1958

JOHN M. PEIRCE, Director

By /s/ Emil J. Relat
Senior Counsel



LEGEND

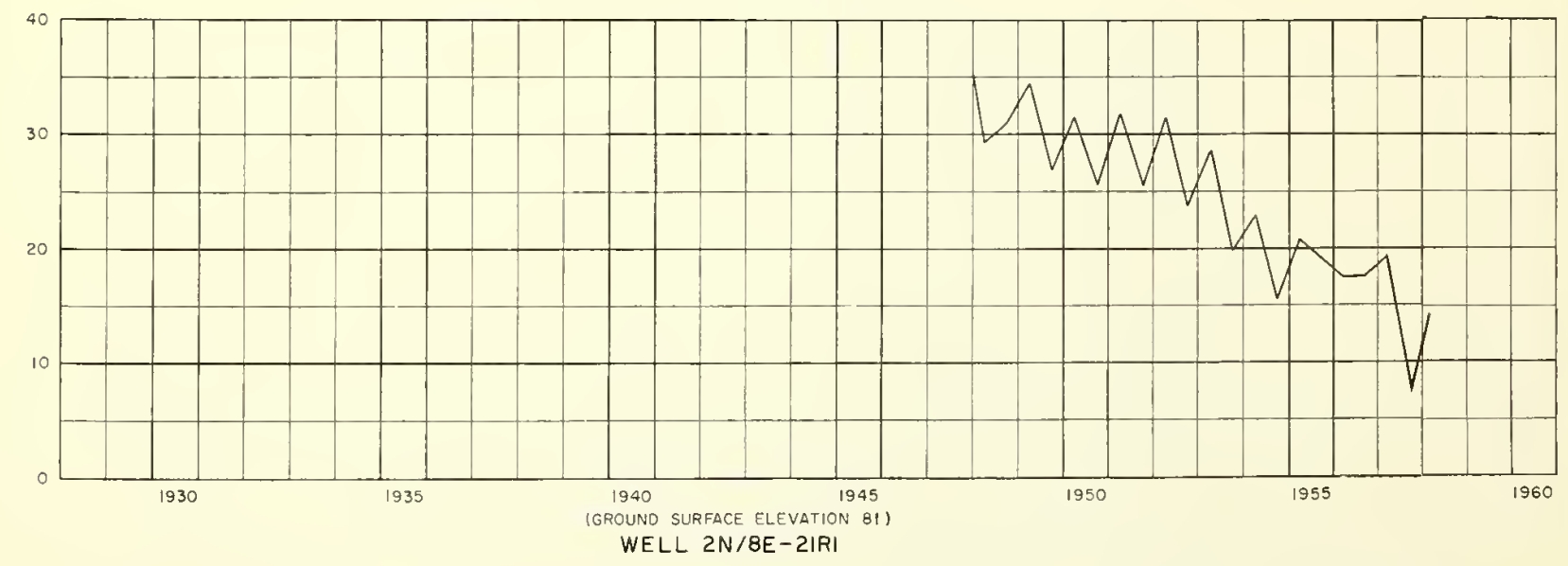
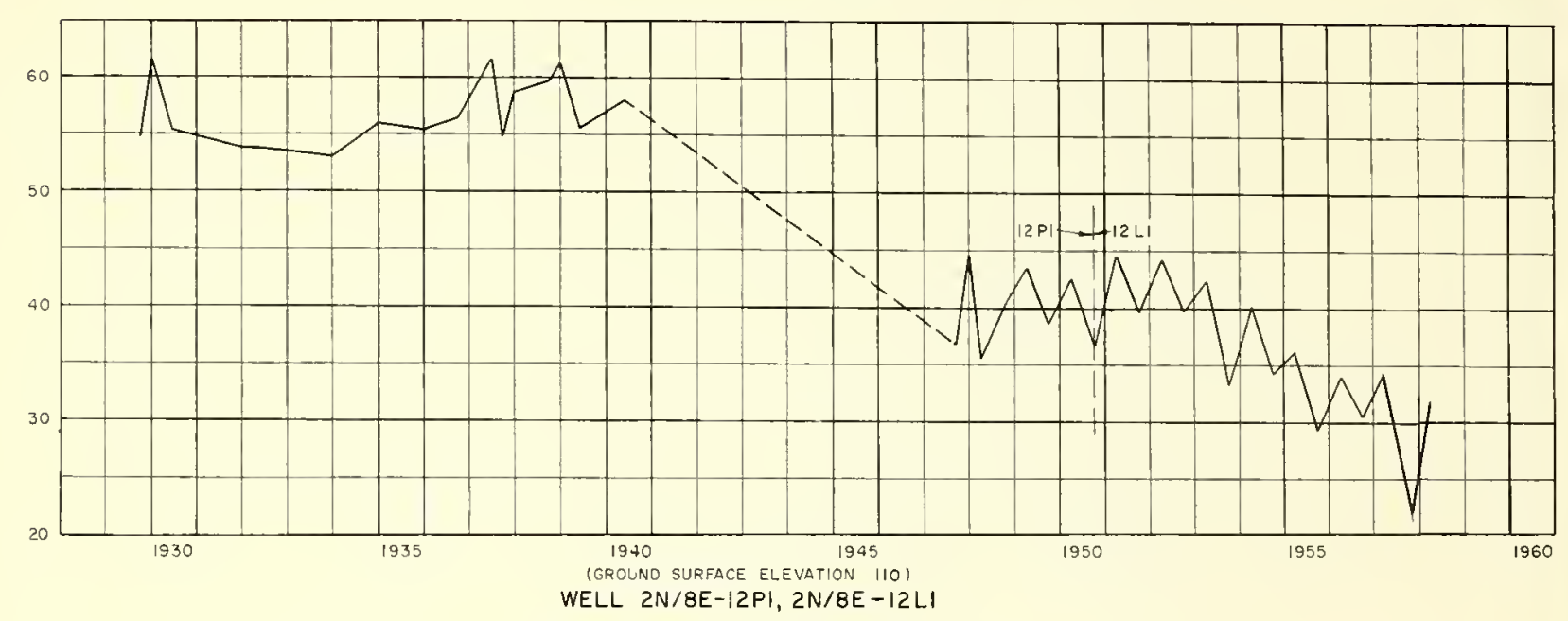
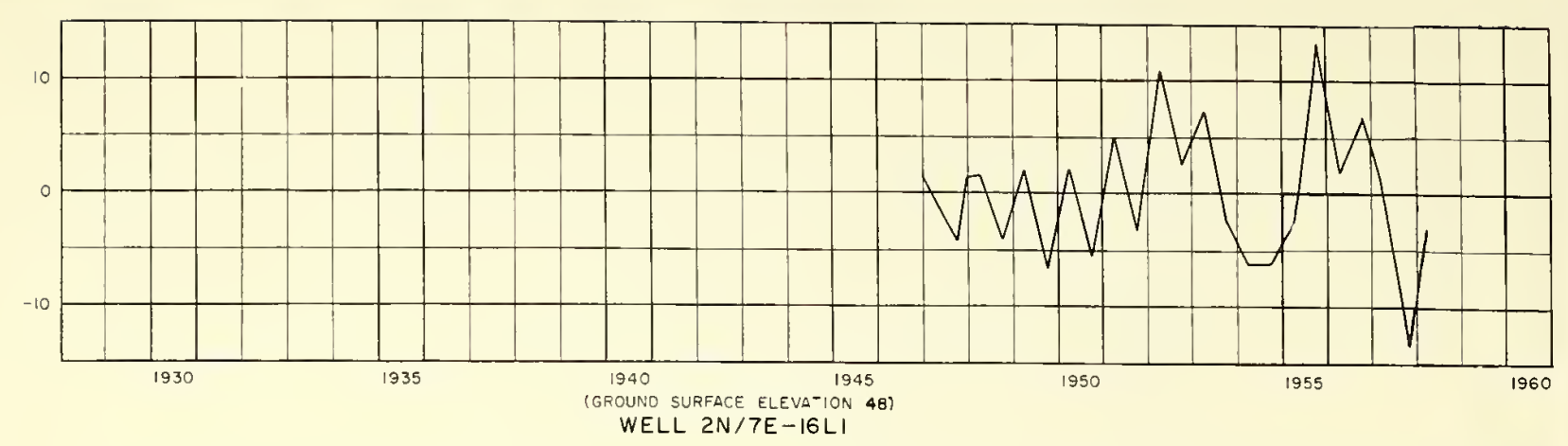
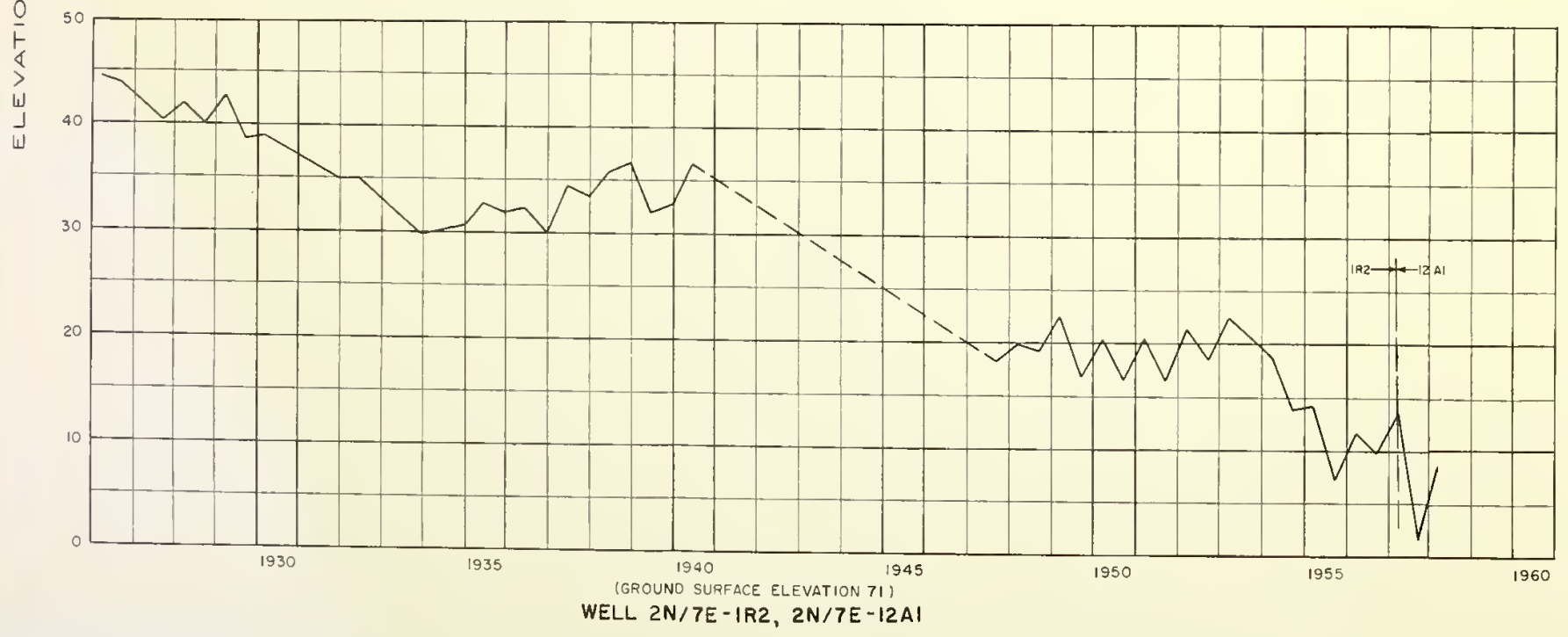
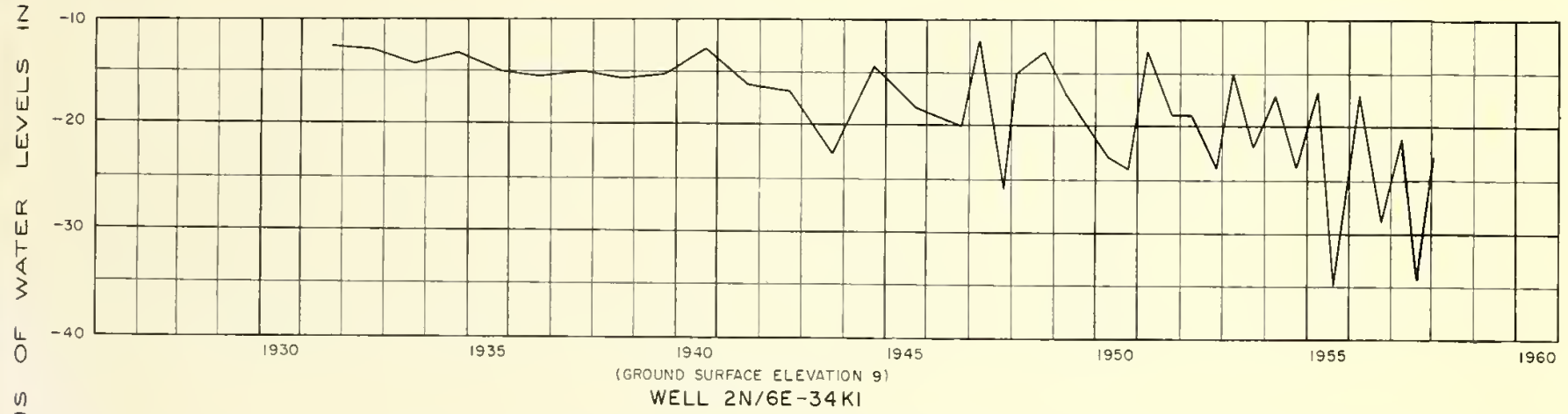
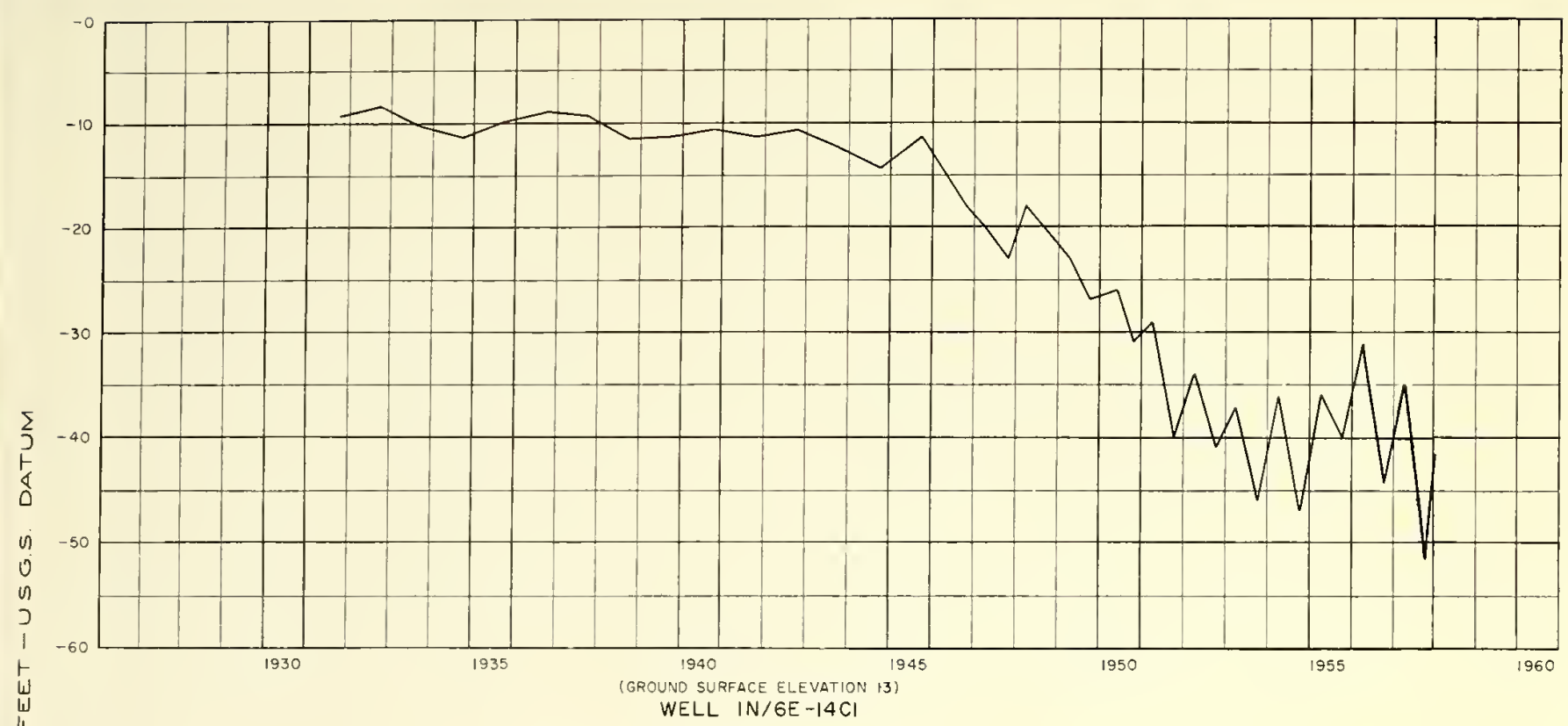
- MEASUREMENT WELL, FALL OF 1957 AND SPRING OF 1958
- ⊙ MEASUREMENT WELL WITH HYDROGRAPH OF WATER LEVELS
- ◇ MINERAL ANALYSIS
- ⊕ MINERAL ANALYSIS AND WATER LEVEL MEASUREMENT
- ▲ STREAM GAGING STATION
- UNIT BOUNDARY

NOTE:
Data Obtained During The Years 1957 and 1958

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
SAN JOAQUIN COUNTY INVESTIGATION

**LOCATION OF WELLS
AND
STREAM GAGING STATIONS
IN CALAVERAS UNIT**

SCALE OF MILES
0 1 2



STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
SAN JOAQUIN COUNTY INVESTIGATION
ELEVATIONS OF WATER LEVELS
IN SELECTED WELLS
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